

## Ubiquitous games and gamification for well-being

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### Abstract

Ubiquitous games and gamification have recently become a widely applied approach for promoting well-being and improving health behaviours such as a physically active lifestyle. In this Special Issue of the Journal ICST Transactions on Ambient Systems, we collected a selection of high-quality papers presented at the workshop on “Ubiquitous games and gamification for promoting behaviour change and wellbeing”, held at the 2013 CHIItaly Conference. The articles explore different areas where ubiquitous games and gamification can influence the attitudes, health and behaviours of people towards well-being, from the management of diseases to eco-sustainable mobility, from serious moral games to the monitoring of burnout levels and the well-being of small groups during social occasions such as museum visits.

**Keywords:** Ubiquitous games, gamification, well-being, quality of life.

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### 1. Introduction to the Special Issue

This Special Issue of the Journal ICST Transactions on Ambient Systems is composed of a selection of high-quality papers presented at the workshop on “Ubiquitous games and gamification for promoting behaviour change and well-being” (CHIItaly 2013 Conference), updated and reworked for final publication. The key idea behind the workshop was to promote the gathering of researchers, professors, students, and practitioners in the field of game industry, healthcare, Human-Computer Interaction, and Ubiquitous Computing related domains within the context of the CHI Italian Conference. The goal of the workshop was to discuss how ubiquitous games can influence attitudes, health and behaviours of people, and specifically how games can be used to promote well-being through behaviour change. This goal follows an increasing interest in the use of digital games and game mechanics for improving quality of life. The workshop covered topics connected to gamification, ubiquitous games interaction experiences, serious games, games and virtual environments for rehabilitation and behaviour recognition.

Games constitute a basic component of human experience in all cultures [1] and typically involve mental and/or physical stimulation. In recent years, researchers started to explore the fusion of game-based approaches and modern technologies for maintaining and regaining both physical and mental well-being. In particular, Gamification [2, 3] and Serious game-based approaches [4, 5] have demonstrated a great potential as tools for promoting and supporting well-being and physical activity, by introducing recreational elements in the prevention, management and treatment of diseases. This has contributed to the development of an interdisciplinary research field that focuses on the use of interactive technologies for stimulating positive behaviour change.

In this area, the domain of Ubiquitous Computing plays an important role by providing effective methods for the analysis and automatic recognition of human behaviour, the assessment of behavioural change, the evaluation of user experience, and the connection between the real and the virtual world. Introducing a game context in the promotion of behaviour change and well-being (including rules, goals, challenges and leveraging on social processes) while monitoring the real environment and tracking the user behaviour provides a framework that offers an extensive range of opportunities for stimulating a healthy lifestyle, as well as for the rehabilitation of motor and cognitive functions.

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The goal of the workshop was therefore to create a collaborative platform among experts from the game industry, healthcare, HCI, and UbiComp to explore areas where ubiquitous games and gamification can influence the attitudes, health and behaviours of people towards well-being. This Special Issue of the Journal ICST Transactions on Ambient Systems collects a multi-stage peer-reviewed selection of high-quality contributions presented at the workshop and reworked for inclusion in the journal.

The first article by Rosa Maimone and Monica Tentori describes iFlit, an interactive and collaborative ambient display designed to help students to reflect about their burnout levels and their sleeping and activity habits. The system employs a metaphor to increase students' awareness and induce cognitive dissonance: students are represented as birds in a garden, where birds' movements and the background change according to the users' behaviour.

The paper authored by Silvia Gabrielli, Rosa Maimone, Lucia Pannese, Giancarlo Bo and Marco Pompa presents two different game-based design experiences to support home rehabilitation and eco-sustainable mobility. This paper highlights the importance of connecting the game contexts to the user real environment, and the importance of supporting customization by and for users.

Markus Christen, Florian Faller, Ulrich Götz and Cornelius Müller tackle the issue of biomedical ethics, discussing opportunities and limitations of the use of video games for reflection on moral problems in medical practice. They introduce the idea of Serious Moral Games, suggesting the use of game-based experiences for medical moral training.

Tiago Gomes, Tiago Abade, Michael D. Harrison, José Creissac Campos and José Luís Silva describe a specific application of APEX, (rApid Prototyping for user EXperience), a framework developed for UbiComp environments prototyping. In their paper, the authors describe how APEX was used as a platform for the development of a 3D immersive environment aimed at increasing awareness and promoting a healthy lifestyle in children with asthma and respiratory problems.

Finally, the article by Charles Callaway and Oliviero Stock addresses a different aspect of well-being: promoting meaningful cultural experiences during museum visits by increasing the amount of conversation among small groups of visitors. The authors present DramaTric, a mobile presentation system that delivers dynamically adapted dramas to small groups of visitors, in order to stimulate group discussion and social interactions.

We are very pleased to present this Special Issue of ICST Transactions on Ambient Systems, which collects some of the most recent advances in the field of UbiComp and gamification for well-being and behavioural change, and we hope that you will enjoy reading these articles as much as we have enjoyed our participation and collaboration in the workshop held at the 2013 CHIItaly conference. Finally, we wish to thank all the participants to the workshop, presenters and audience. A special thanks goes to all the reviewers and the members of the Scientific Committee, whose support has been fundamental for the creation of this Special Issue.

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